WHAT IS CLAIMED IS:

1. A method for managing power utilization and performance of a multiprocessor (MP) system comprising the steps of:

receiving first sensor data defining physical parameters of said MP system;

receiving first parameters corresponding to operational requirements of said MP system;

determining power and performance goal settings for processors in said MP system in response to said first sensor data and said first parameters;

generating a set of controls for said MP system in response to said power and performance goal settings; and

applying said set of controls to adjust operation parameters of said processors in said MP system.

2. The method of claim 1, wherein said method further comprises the step of:

applying said controls to adjust operation parameters of cooling systems for said MP system.

3. The method of claim 1, wherein said MP system comprises a single multiprocessor very large scale integrated circuit (VLSI) chip.

4. The method of claim 3, wherein said MP system comprises a cooling means for said multiprocessor VLSI chip.

5. The method of claim 4, wherein said cooling means comprises a single chip cooling fan.

6. The method of claim 4, wherein said cooling means comprises a controllable single chip thermo-electric cooler.

7. The method of claim 3, wherein said MP system comprises a self-contained MP system, said self-contained MP system comprising a plurality of said multiprocessor VLSI chips, said self-contained MP system further comprising a first controllable cooling system.

8. The method of claim 7, wherein said MP system comprises a rack MP system, said rack MP system comprising a plurality of said self-contained MP systems and a controllable rack cooling system.

9. The method of claim 8, wherein said MP system comprises a plurality of said rack MP systems, said MP system further comprising a controllable MP system cooling means.

10. The method of claim 1, wherein said first sensor data comprises temperatures of said processors in said MP system, supply voltages corresponding to circuits in said processors, clock frequencies of said processors, electromagnetic radiation (EMC) of said MP system, acoustic levels of said MP system, vibration levels of said MP system, and air temperatures of cooling systems in said MP system.

11. The method of claim 1, wherein said first parameters comprise quality of service parameters for said MP system.

12. The method of claim 1, wherein said first parameters comprise policy of operation parameters for said MP system.

13. The method of claim 11, wherein said quality of service parameters comprise assignment data defining processor assignment to tasks performed by said MP system,

access availability data for processors in said MP system, performance level data defining a performance for an application executing on processors of said MP system, and processor operational data defining which of said processors are operational.

14. The method of claim 12, wherein said policy of operation parameters comprise data defining a cost of power for said MP system, acceptable acoustic noise level data for said MP system, acceptable EMC output noise level data for said MP system, acceptable output vibration level data of said MP system and acceptable temperature level data for elements of said MP system.

15. The method of claim 1, wherein said power and performance goals comprise data defining a desired MP system power consumption level, data defining a desired processor power consumption level, data defining desired MP system temperatures, desired MP acoustic noise output levels, desired EMC noise levels, and desired processor instruction execution speeds.

16. The method of claim 1, wherein said set of controls comprise power supply voltage settings for said processors, clock frequency settings for said processors, cooling fan speeds, controls for said MP system cooling means and operational mode settings for said processors.

17. The method of claim 16, wherein said operational mode settings comprise an active mode and a sleep low power mode.

18. The method of claim 16, wherein said MP system cooling means comprises channeled temperature conditioned air.

19. A controller for managing power and performance in a multiprocessor MP system comprising:

a first receiving circuit operable to receive first sensor data corresponding to physical parameters of said MP system;

a second receiving circuit operable to receive first parameters defining operational requirements of said MP system;

a third circuit operable to determine power and performance goal settings for said processors in said MP system in response to said first data and said first parameters;

a fourth circuit operable to generate a set of controls for said MP system in response to said power and performance goal settings; and

a fifth circuit operable to apply said set of controls to adjust operation parameters of said processors in said MP system.

20. The controller of claim 19, wherein said fifth circuit is further operable to apply said set of controls to adjust operation parameters of cooling systems of said MP system.

21. The controller of claim 19, wherein said set of controls comprise power supply voltage settings for said processors, clock frequency settings for said processors, cooling fan speeds, controls for said MP system cooling means and operational mode settings for said processors.

22. The controller of claim 21, wherein said operational mode settings comprise an active mode and a sleep low power mode.

23. The controller of claim 21, wherein said MP system cooling means comprises channeled temperature conditioned air, chilled fluid and solid state cooling units.

24. A multiprocessor (MP) system comprising a plurality of processors and a controller for managing power and performance in said MP system, said controller further comprising:

circuitry for receiving first sensor data defining physical parameters of said MP system;

circuitry for receiving first parameters corresponding to operational requirements of said MP system;

circuitry for determining power and performance goal settings for processors in said MP system in response to said first sensor data and said first parameters;

circuitry for generating a set of controls for said MP system in response to said power and performance goal settings; and

circuitry for applying said set of controls to adjust operation parameters of said processors in said MP system.

25. The MP system of claim 24, wherein said controller is one of said plurality of processors in said MP system.

26. The MP system of claim 24, further comprising:

circuitry for applying said controls to adjust operation parameters of cooling systems for said MP system.

27. The MP system of claim 24, wherein said MP system comprises a single multiprocessor very large scale integrated circuit (VLSI) chip.

28. The MP system of claim 27, wherein said MP system comprises a cooling means for said multiprocessor VLSI chip.

29. The MP system of claim 28, wherein said cooling means comprises a single chip cooling fan.

30. The MP system of claim 27, wherein said MP system comprises a self-contained MP system, said self-contained MP system comprising a plurality of said multiprocessor VLSI chips, said self-contained MP system further comprising a first controllable cooling system.

31. The MP system of claim 30, wherein said MP system comprises a rack MP system, said rack MP system comprising a plurality of said self-contained MP systems and a controllable rack cooling system.

32. The MP system of claim 31, wherein said MP system comprises a plurality of said rack MP systems, said MP system further comprising a controllable MP system cooling means.

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33. The MP system of claim 24, wherein said first parameters comprise policy of operation parameters for said MP system.